

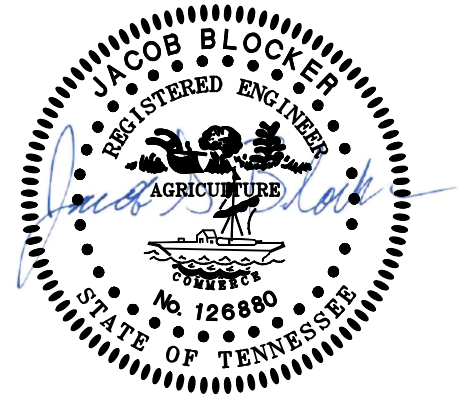
PROJECT: SRF 2018-418 Rocky Top Sanitary Sewer Rehabilitation
Rocky Top, TN

ADDENDUM NO.: 1

ADDENDUM DATE: December 21, 2023

OWNER: City of Rocky Top
195 S Main Street
Rocky Top, TN 37769

ENGINEER: Cannon & Cannon, Inc.
10025 Investment Drive
Suite 120
Knoxville, Tennessee 37932



12/21/2023

ALL BIDS SHALL CONFORM TO THIS ADDENDUM:

This addendum forms a part of the Contract referenced above. The following items covering changes in the bidding requirements shall apply to and become a part of the requirements thereof.

Receipt of this Addendum shall be acknowledged by inserting its number and date in the space on the Bid Form. Failure to do so may result in disqualification of the Bidder.

This Addendum consists of four pages and the following attachments:

- Pre-Bid Meeting Minutes and Sign-In Sheet
- Specification Section 00 41 13 – Bid Form
- Specification Section 01 22 00 – Measurement and Payment
- Specification Section 33 05 05 – Sanitary Sewer Testing

ITEM NO. 1 MODIFICATIONS

- A. Section 00 41 43 – Bid Form: Add line item 2.07 – Open Cut Replacement 8" PVC Gravity Sewer (2,450 LF).
- B. Section 00 41 43 – Bid Form: Add "P.O. Box 66" to City of Rocky Top address.
- C. Section 01 22 00 – Measurement and Payment: Add pay item 2.07 – Open Cut Replacement 8" PVC Gravity Sewer.
- D. Section 33 05 05 – Sanitary Sewer Testing: Add requirements for Holiday Detection Testing in accordance with ASTM D-4787.

ITEM NO. 3 REPLACEMENTS

- A. Section 00 41 43 – Bid Form: Replace line item 3.01 – Epoxy Manhole Lining with line item 3.01 – Polyurea Manhole Lining.

- B. Section 01 22 00 – Measurement and Payment: Replace pay item 3.01 – Epoxy Manhole Lining with pay item 3.01 – Polyurea Manhole Lining.

ITEM NO. 2 CLARIFICATIONS

It should be stated that only questions that were received formally by the Engineer in writing shall be included in the addendum and in the bid. Questions that were asked to Owner will not be included.

- A. I would like to see if I can get our Mainstay Composite Liner approved for the [Rocky Top Sanitary Sewer Rehabilitation] project.
 - a. Specifications regarding acceptable manhole lining systems will not be modified; if a submitted product meets the requirements of the specifications, the product may be approved as equal by the Engineer.
- B. I have found 7 runs of 8" Open Cut Replacement (2438 LF) on the plans. There is currently no Pay Item for this Open Cut work. Can you clarify please?
 - a. See Modifications Item A and Item B. A pay item will be provided for Open Cut Replacement 8" PVC Gravity Sewer.
- C. Will spark/holiday testing be allowed for manholes rehabilitated with polyurea lining?
 - a. See Modifications Item C. Holiday testing will be allowed for manholes rehabilitated with polyurea lining.
- D. Will a pay item be added for temporary support of utility poles as required?
 - a. Temporary support of utility poles will be the responsibility of the contractor and a pay item will not be provided.

END ADDENDUM NO. 1

PROJECT	SRF 2018-418 ROCKY TOP SANITARY SEWER REHABILITATION	CCI PROJECT # 01265-0013
DATE	December 19, 2023	2:00 PM EST
LOCATION	Rocky Top, TN 37769	
PURPOSE	PRE-BID CONFERENCE	

1. INTRODUCTION & SIGN IN

Owner: City of Rocky Top

Mr. Kerry Templin, Mayor

Mr. Mike Ellis, City Manager

Engineer: Cannon & Cannon, Inc.

Mr. Jacob Blocker, P.E., Project Manager/ Engineer of Record

Mr. Joey Allston, E.I., Project Engineer

2. BIDDING REQUIREMENTS

**A. Bids to be opened at: Rocky Top City Hall
195 S Main Street
Rocky Top, TN 37769**

B. Plan Holder (Electronic or Paper)

C. Outside of Envelope (see SECTION 00 21 13)

- Project Title
- Name and address of bidder
- If sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED."
- Addressed to: **ATTN: Mr. Kerry Templin, Mayor
City of Rocky Top
195 S Main Street
P.O. Box 66
Rocky Top, TN 37769**

D. Items to include with Bid Submission (see SECTION 00 41 43):

- Bid Form
 - Acknowledgement of any Addenda
 - All blank spaces for bid prices must be filled in, in ink or typewritten
 - Signed and dated
 - Corrections initialed
- Required Bid security in the form of 5% Bid Bond or Bank Check in the amount of 5% of the Bid
- Tabulation of subcontractors, suppliers and other individuals and entities required to be identified in this bid
- Qualifications Statement
- Non-Collusion Affidavit of Prime Bidder
- Drug-Free Workplace Affidavit
- Volume 1A - State Revolving Fund Documents
- Volume 1B – Community Development Block Grant Documents
- Volume 1C – American Rescue Plan Documents

3. SCHEDULE

Key Dates are as follows:

- **Tuesday December 19, 2023** Pre-Bid Meeting at 2:00 PM
- **Friday January 5, 2024** Cut-off for questions at 5:00 PM
- **Tuesday January 9, 2024** Issue Addendum by 5:00 PM
- **Thursday January 11, 2024** **Bid opening at 2:00 PM** (local time)
- Direct question, in writing, to Jacob Blocker, P.E. jblocker@cannon-cannon.com by the date above. Questions not received in writing or received after the cut-off for questions will not be answered.
- Board approval on or about January 18, 2024 (holidays may affect date)
- Notice of award will be issued in the weeks after the City of Rocky Top Board Meeting.

- Notice of award will be written to reflect that the award is contingent upon funding approval.
- Notice to proceed (NTP) will be coordinated with contractor and owner. Submittals and work are expected to begin within **1** month of NTP.
- Required Substantial Completion within **330** days of NTP
- Required Final Completion within **360** days of NTP

4. PROJECT OVERVIEW

The Project includes the rehabilitation of approximately **2,450 LF of 8-inch PVC open cut replacement**, 9,920 LF of 6-inch to 18-inch gravity sewer lines by CIPP lining, 8,200 LF of pipe bursting 8-inch gravity sewer line, 65 counts of point repairs of 8" gravity sewer line, rehabilitation of approximately 1,200 VF of manholes by epoxy lining, replacement of 76 manholes, replacement of 30 frame and cover assemblies, replacement of 55 covers, resetting of 60 frame and cover assemblies, and replacement of 130 defective taps, laterals, and cleanouts.

5. QUESTIONS

- Q. Will a pay item for open cut replacement of 8" gravity sewer be provided?
- A. A pay item for open cut replacement of 8" gravity sewer will be added to the bid tab.
- Q. Will a pay item be added for temporary support of utility poles as required?
- A. Temporary support of utility poles will be the responsibility of the contractor and a pay item will not be provided.
- Q. Will spark/holiday testing be allowed for polyurea manhole liners?
- A. Yes, spark/holiday testing is an approved alternative to vacuum testing for polyurea manhole liners.
- Q. Will there be a 60-day delay on payments as is often seen in SRF projects?
- A. There are four funding agencies involved with this project, which is anticipated to cause some delay in payment. However, SRF has recently had a turn-around of less than 60 days.

6. COMMENTS

- C. Active SAM.gov registration is required for contract award.
- C. Wage rate is governed by the Davis-Bacon Act. Davis-Bacon wage rates are often adjusted at the end of the year. If the Davis-Bacon wage rate sees a change during bidding, the change will be reflected in addenda.
- C. SRF requires compliance with the American Iron and Steel provisions.
- C. DBE solicitation efforts and documentation of these efforts are required by the bidder. Solicitation of a minimum of 10 DBEs is required, and acceptable documentation is certified mail with a return receipt. Documentation of solicitation efforts should be included with the bid. Emails with return receipts are not considered adequate documentation.
- C. Retainage shall be 5%.



PROJECT: SRF 2018-418, Sanitary Sewer Rehabilitation
City of Rocky Top
Rocky Top, Tennessee

[illegible]

SECTION 00 41 43
BID FORM

Sanitary Sewer Rehabilitation

TABLE OF CONTENTS

	Page
Article 1 – Bid Recipient	1
Article 2 – Bidder’s Acknowledgements	1
Article 3 – Bidder’s Representations	1
Article 4 – Bidder’s Certification.....	2
Article 5 – Basis of Bid.....	3
Article 6 – Time of Completion.....	5
Article 7 – Attachments to this Bid.....	5
Article 8 – Defined Terms	5
Article 9 – Bid Submittal	6

ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid is submitted to:

City of Rocky Top
195 South Main Street
P.O. Box 66
Rocky Top, TN 37769

- 1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

- 2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER'S REPRESENTATIONS

- 3.01 In submitting this Bid, Bidder represents that:

- A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

Addendum No.

Addendum, Date

_____	_____
_____	_____
_____	_____
_____	_____

- B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
- C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
- D. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- E. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

- F. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- G. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- H. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- I. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER’S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and
- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
 - 1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 - 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 - 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 - 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):

Line Item	Description	Estimated Quantity	Units	Unit Price	Ext. Price
1.00	Miscellaneous				
1.01	Mobilization (8.25%)	1	LS	\$	\$
1.02	Erosion Protection and Sediment Control	1	LS	\$	\$
1.03	Traffic Control	1	LS	\$	\$
1.04	Sewer Flow Control	1	LS	\$	\$
2.00	Sanitary Sewer Gravity Pipe Repair/Rehab:				
2.01	Abandon Existing Sewer by Grouting	700	LF	\$	\$
2.02	CIPP 6" Gravity Sewer	120	LF	\$	\$
2.03	CIPP 8" Gravity Sewer	7,200	LF	\$	\$
2.04	CIPP 10" Gravity Sewer	1,400	LF	\$	\$
2.05	CIPP 18" Gravity Sewer	500	LF	\$	\$
2.06	Pipe Burst 8" Gravity Sewer	8,200	LF	\$	\$
2.07	Open Cut Replacement 8" PVC Gravity Sewer	2,450	LF	\$	\$
3.00	Sanitary Sewer Manhole Repair/Rehab:				
3.01	Polyurea Manhole Lining	1,200	VF	\$	\$
3.02	Replace Sanitary Sewer Manhole (0' - 6')	52	EA	\$	\$
3.03	Replace Sanitary Sewer Manhole (6' - 8')	10	EA	\$	\$
3.04	Replace Sanitary Sewer Manhole (8' - 10')	7	EA	\$	\$
3.05	Replace Sanitary Sewer Manhole (10' - 12')	4	EA	\$	\$
3.06	Replace Sanitary Sewer Manhole (12' - 14')	1	EA	\$	\$
3.07	Replace Sanitary Sewer Manhole (14' - 16')	2	EA	\$	\$
3.08	Replace Frame and Cover Assembly (Solid)	30	EA	\$	\$
3.09	Replace Frame and Cover Assembly (Watertight)	55	EA	\$	\$
3.10	Reset Frame and Cover Assembly	60	EA	\$	\$
3.11	Replace Cover (Solid)	60	EA	\$	\$
4.00	Sanitary Sewer Point Repair/Rehab:				
4.01	Replace Defective Tap, Lateral, and Cleanout (Short Side)	40	EA	\$	\$
4.02	Replace Defective Tap, Lateral, and Cleanout (Long Side)	90	EA	\$	\$
4.03	Point Repair 8" Gravity Sewer	65	EA	\$	\$

4.04	Point Repair 8" Gravity Sewer (Additional Footage, As Directed)	320	LF	\$	\$
5.00	Restoration				
5.01	Asphalt Pavement Removal and Replacement	400	SY	\$	\$
5.02	Concrete Pavement Removal and Replacement	200	SY	\$	\$
5.03	Seed and Straw	1,000	SY	\$	\$
	Total:			\$	

Bidder acknowledges that (1) each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and (2) estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

Total of Base Bid, Items No. 1.00 Through No. 5.03 Inclusive,

\$ _____

(words)

DOLLARS.

(words)

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7 – ATTACHMENTS TO THIS BID

- 7.01 The following documents are submitted with and made a condition of this Bid:
- A. Required Bid security;
 - B. Certification of proposed prime bidder regarding equal employment opportunity
 - C. Certification regarding debarment, suspension and other responsibility matters
 - D. Non-collusion affidavit of prime bidder
 - E. Certification regarding lobbying
 - F. DBE Documentation

ARTICLE 8 – DEFINED TERMS

- 8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 9 – BID SUBMITTAL

BIDDER: [Indicate correct name of bidding entity]

By:

[Signature] _____

[Printed name] _____

(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest:

[Signature] _____

[Printed name] _____

Title: _____

Submittal Date: _____

Address for giving notices:

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Bidder's License No.: _____

(where applicable)

END SECTION 00 41 43

SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SCOPE

- A. The Bid lists each item of the Project for which payment will be made. No payment will be made for any items other than those listed in the Bid.
- B. Required items of work and incidentals necessary for the satisfactory completion of the work which are not specifically listed in the Bid, and which are not specified in this section to be measured or to be included in one of the items listed in the Bid, shall be considered as incidental to the work. All costs thereof, including Contractor's overhead costs and profit, shall be considered as included in the lump sum or unit prices bid for the various Bid items. The Contractor shall prepare the Bid accordingly.
- C. Work includes furnishing all plant, labor, equipment, tools and materials, which are not furnished by the Owner and performing all operations required to complete the work satisfactorily, in place, as specified and as indicated on the Drawings.

1.2 DESCRIPTIONS

- A. Measurement of an item of work will be by the unit indicated in the Bid.
- B. Final payment quantities shall be determined from the actual quantities installed in the field.
- C. Payment will include all necessary and incidental related work not specified to be included in any other item of work listed in the Bid.
- D. Unless otherwise stated in individual sections of the Specifications or in the Bid, no separate payment will be made for any item of work, materials, parts, equipment, supplies or related items required to perform and complete the work. The costs for all such items required shall be included in the price bid for the item of which it is a part.
- E. Payment will be made by extending unit prices multiplied by quantities provided and then summing the extended prices to reflect actual work. Such price and payment shall constitute full compensation to the Contractor for furnishing all plant, labor, equipment, tools and materials not furnished by the Owner and for performing all operations required to provide to the Owner the entire Project, complete in place, as specified and as indicated on the Drawings.
- F. "Products" shall mean materials or equipment permanently incorporated into the work.

1.3 MEASUREMENT

- A. General: Measuring, and metering devices used to measure quantity of materials for the Work shall be suitable for purpose intended and conform to tolerances and specifications as specified in National Institute of Standards and Technology, Handbook 44.
- B. Where measurement of quantities depends on elevation of existing ground, elevations obtained during construction will be compared with those shown on Drawings. Variations of 1 foot or less will be ignored, and depths shown on the Drawings will be used for determining quantities.
- C. Units of measurement shown on the bid schedule shall be as follows, unless specified otherwise:
 - 1. EA Each – Field count by Owner.
 - 2. LF Linear Foot – Horizontal field measure by Owner.
 - 3. LS Lump Sum – Percentage complete by Owner.
 - 4. SY Square Yard – Field measure by Owner.
 - 5. VF Vertical Foot – Vertical field measure by Owner.
- D. Definitions:
 - 1. Each (EA): Field counted by the Owner as installed and accepted.
 - 2. Linear Foot (LF): Field measured horizontally by the Owner. Measured centerline to centerline of manhole or fitting. Manhole diameter and fitting length shall be included in the linear measurement.
 - 3. Lump Sum (LS): Field verified by Owner.
 - 4. Square Yard (SY): Field measured and calculated by Owner. Measurement shall be horizontal distances measured to the nearest 0.5 foot, calculated in square feet, converted to square yards, and rounded to the nearest square yard by the Owner.
 - 5. Vertical Foot (VF): Field measured by Owner. Measure from manhole rim to lowest pipe invert.

1.4 STORED MATERIALS AND EQUIPMENT

- A. No applications shall be processed by Owner which includes amounts for stored materials. Owner shall not pay Contractor for stored materials.
- B. Contractor's application for payment for unit price components shall be based upon installed units identified on the bid form.
- C. Contractor's application for payment for lump sum components shall be based upon percent completion of work associated with the lump sum component.

1.5 ITEMS NOT CONSIDERED AS PAY ITEMS

- A. Unless explicitly stated in the Contract Documents, the following items are not considered as pay items:
 - 1. Excavation for Utilities (Section 31 23 16.01)
 - 2. Sanitary Sewer Testing (Section 33 05 05)

- B. Unclassified excavation for utilities is not a pay item unless explicitly stated in this Contract Document. Unclassified excavation shall be considered and designated a necessary part of the construction for trench depths as defined by the individual unit price for the line installation and as required by the Project Drawings. Unit prices bid for utilities with which unclassified excavation is connected shall be full compensation for this item.
- C. Rock excavation is not a pay item unless explicitly stated in this Contract Document. Rock excavation shall be considered and designated a necessary part of the construction, and unit prices bid for items which rock excavation is connected shall be full compensation for this item.
- D. Payment will not be made for rejected or unused products. Payment will not be made for the following:
 - 1. Loading, hauling, and disposing of rejected material.
 - 2. Quantities of material wasted or disposed of in a manner not called for under the Contract Documents.
 - 3. Rejected loads of material, including material rejected after it has been placed by reason of failure of Contractor to conform to provisions of the Contract Documents.
 - 4. Material not unloaded from transporting vehicle.
- E. Site cleanup is not a separate pay item unless explicitly stated in this Contract Document. It includes the equipment, material, and labor to maintain the Site on a daily and weekly basis in a clean environment, removing debris, unused material, cleaning, raking, general restoration of disturbed areas to a condition equal to or better than prior to construction. All debris and material shall be removed from the site and properly disposed of offsite in an approved permitted manner. Site cleanup is not a pay item and shall be considered and designated a necessary part of the construction and unit prices bid for utilities which unclassified excavation is connected shall be full compensation for this item. See Section 32 11 00.01 – Surface Restoration.
- F. Routine maintenance and removal of erosion and pollution control measures is not a separate pay item but shall be completed for items that have been installed, including the establishment/replacement of damaged items, removal of accumulated “silt” behind the temporary structures as well as final removal once construction is complete and accepted by the Owner. See Section 31 25 00 – Erosion and Sedimentation Controls.

1.6 BID ITEM PAYMENT

- A. Payment for unit price items covers all the labor, materials, tools, equipment, overhead, and services necessary to furnish and install the following items. Payment for bid items will be as stated below.
- B. **Pay Item No. 1.01 – Mobilization** to the job site is a lump sum pay item and shall be paid by the following break out. This item shall include all mobilization, demobilization, bonds, and insurance costs incurred by the Contractor associated with such site. Payment for Mobilization is limited to the unit price bid or 8.25% of project bid total, whichever is less.
 - 1. First 45% on the first monthly pay estimate
 - 2. Second 45% on the pay estimate that shows 50% completion of the project, not including allowance for stored materials.
 - 3. Final 10% on the final pay estimate

- C. **Pay Item No. 1.02 – Erosion Control** is a lump sum pay item and includes all erosion control devices required by the Owner and/or agency having jurisdiction. This includes all material, labor, tools, and equipment to facilitate complete installation. See Section 01 57 13 – Erosion and Sedimentation Controls. All measures shall be monitored and maintained per specifications and shall not be removed until all associated permits or approvals have been obtained. This item shall be paid in the following manner:
- 1.) 10% for all submitted earth disturbing SWPPP documentation approved by TDEC.
 - 2.) 15% when 25% of the contract work is completed.
 - 3.) 25% when 50% of the contract work is completed.
 - 4.) 25% when 75% of the contract work is completed.
 - 5.) 25% when 75% stabilization has been obtained, all temporary erosion and sediment control devices have been removed and the storm water permit has been terminated.
- D. **Pay Item No. 1.03 – Traffic Control** is a lump sum pay item which includes the development, submittal, review, and implementation of traffic control plans, as required for Work, which have been prepared and stamped by a registered engineer and submitted to Owner for approval. Lump sum price shall include all labor, materials, tools, and equipment required. Payments for this lump sum item will be made based on percentage of work complete for the entire project.
- E. **Pay Item No. 1.04 – Sewer Flow Control** is a lump sum pay item. Lump sum price bid for gravity sewer flow control shall be full compensation for this item and includes all labor, materials, tools, and equipment necessary, including but not limited to sewer dams, plugs, bypass pumps with standby units, fuel, maintenance, operation, supervision, and suction/discharge piping as required to bypass gravity sewer. Payments for this lump sum item will be made based on percentage of work complete for the entire project. See Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control.
- F. **Pay Item No. 2.01 – Abandon Existing Sewer by Grouting** is a linear foot unit price pay item. This unit price item shall include all labor, materials, tools, and equipment required to abandon existing sewer pipe in place by filling with grout as indicated in the Construction Drawings.
- G. **Pay Items No. 2.02 – 2.05 – CIPP Gravity Sewer** is a linear foot unit price pay item. Unit price item shall include all labor, materials, tools and equipment required for pre- and post-CIPP lining CCTV inspections, high-velocity cleaning, lining, installing, curing, required testing, end sealing, temporary internal service reinstatement, permanent service reinstatement with interface seal, and debris collection and disposal. See Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control and Section 33 01 30.72 – Cured-in-Place Pipe.
- H. **Pay Item 2.06 – Pipe Burst Gravity Sewer** is a linear foot unit price pay item. Unit price item shall include all labor, materials, tools, and equipment required for pre- and post-pipe bursting CCTV inspections, high-velocity cleaning as required, pipe staging, pipe fusing, pipe installation, pipe to manhole connection and sealing, sewer service reinstatement, debris collection and disposal, and required testing. See Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control and Section 33 01 30.23 – Pipe Bursting.
- I. **Pay Item 2.07 – Open Cut Replacement 8” PVC Gravity Sewer** is a linear foot unit price pay item. Unit price item shall include all labor, materials, tools, and equipment required for pre- and post-replacement CCTV inspections, bypass pumping, excavation, pipe replacement, service reinstatement, manhole connections, backfill, compaction, debris collection and

disposal, and required testing. See Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control and Section 33 31 11 – Gravity Sewer Pipe.

- J. **Pay Item 3.01 – Polyurea Manhole Lining** is a vertical foot unit price pay item. Unit prices bid for this item shall be per each vertical foot of manhole rehabilitated based on manhole diameter. This unit price item shall include all labor, materials, tools, and equipment required for installation of polyurea manhole lining, vacuum testing, flow control or bypassing, internal plugging of inactive connections, and subsequent realignment or reinstalling of existing frame and cover unless otherwise specified or indicated on the Construction Drawings. If replacement of manhole frame and cover is required, it will be listed as separate pay items in this section. See Section 33 01 30.81 – Manhole Rehabilitation.
- K. **Pay Items 3.02 – 3.07 – Replace Sanitary Sewer Manhole** is a per each unit price pay item. Unit price bids for this item shall be by manhole depth as indicated on the Construction Plans. The unit price item shall include all labor, materials, tools and equipment required for the removal of the existing sanitary sewer manhole and replacement with a new precast concrete manhole in accordance with the specifications, including location, excavation, and removal of existing manhole, installation of replacement manhole, new frame/cover assembly, pipe connections to replacement manhole, backfill, compaction, and all required testing. See Section 33 05 61 – Concrete Manholes.
- L. **Pay Items 3.08 – 3.09 – Replace Frame and Cover Assembly** is a per each unit price pay item. The unit price item shall include all labor, materials, tools and equipment required for the removal of existing frame and cover assembly, turn over to Owner, removal and offsite disposal of mortar and other debris, cleaning, frame/cover seals, and installation of new frame and cover assembly of the type indicated in the Construction Drawings. See Section 33 05 61 – Concrete Manholes.
- M. **Pay Item 3.10 – Reset Frame and Cover Assembly** is a per each unit price pay item. The unit price item shall include all labor, materials, tools and equipment required for the removal of existing frame and cover assembly, cleaning of the frame and cover assembly, removal and offsite disposal of mortar and other debris, cleaning, frame/cover seals, and reinstallation of the frame and cover assembly.
- N. **Pay Item 3.11 – Replace Cover (Solid)** is a per each unit price pay item. The unit price item shall include all labor, materials, tools, and equipment required for the removal of existing cover, turn over to owner, removal and offsite disposal of debris, cleaning, and installation of a new solid cover fabricated to fit the existing cover frame.
- O. **Pay Items 4.01 – 4.02 – Replace Defective Tap, Lateral, and Cleanout** is a per each unit price item. The unit price item shall include all labor, materials, tools, and equipment required for the location, excavation and removal of existing sewer service lateral and cleanout, installation of new sewer service lateral connection, sewer service lateral, and cleanout, backfill, compaction, and required testing. See Section 33 31 30 – Sanitary Sewer Services.
- P. **Pay Item 4.03 – Point Repair 8” Gravity Sewer** is a per each unit price item. The unit price item shall include all labor, materials, tools, and equipment required for the location, inspection, excavation, repair of up to 10 LF of 8” gravity sewer pipe, compaction, and backfill. See Section 33 31 11 – Gravity Sewer Pipe.

- Q. **Pay Item 4.04 – Point Repair 8” Gravity Sewer (Additional Footage, As Directed)** is a linear foot unit price item. The unit price item shall include all labor, materials, tools, and equipment required for the location, inspection, excavation, repair of additional point repair footage beyond 10 LF of 8” gravity sewer pipe as covered in Pay Item 4.03, compaction, and backfill. Additional point repair footage will be used at the direction and discretion of the Owner or Engineer at the request of the Contractor for defects discovered during inspection requiring repair outside the limitations of Pay Item 4.03.
- R. **Pay Item No. 5.01 – Asphalt Pavement Removal and Replacement** is a square yard unit price pay item. Unit price item shall include all labor, materials, tools, and equipment required for excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of removed materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 31 23 16.01 – Excavation for Utilities and Section 32 11 00.01 – Surface Restoration.
- S. **Pay Item No. 5.02 – Concrete Pavement Removal and Replacement** is a square yard unit price pay item. Unit price item shall include all labor, materials, tools, and equipment required for excavation, removal and disposal of material, replacement material to duplicate material type and specification, depth, width, and length of remove materials, cleanup, and 30 days of maintenance. Compensation will be by square yard of repair for Owner approved areas surrounding the work. See Section 31 23 16.01 – Excavation for Utilities and Section 32 11 00.01 – Surface Restoration.
- T. **Pay Item No. 5.03 – Seed and Straw** is a square yard unit price pay item. Unit price bid for site restoration, lawn repair, landscape repair, etc., shall be full compensation for this item and for all labor, materials, tools, water, and equipment required to complete the restoration to its original or better condition. Item includes topsoil, reseeding per property owner’s preference and as directed by the Owner to match existing conditions, maintenance for 60 days or until re-established; maintenance includes water, fertilizer, and mowing. Re-establish at no additional compensation. See Section 32 11 00.01 – Surface Restoration.

END OF SECTION 01 22 00

SECTION 33 05 05 SANITARY SEWER TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and DIVISION 01 specifications sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Hydrostatic and Leakage Testing.
 - 2. Infiltration and Exfiltration Testing
 - 3. Vacuum Testing
 - 4. Low Pressure Air Testing
 - 5. Mandrel Testing
 - 6. **Holiday Detection Testing**
- B. Related Requirements:
 - 1. Section 33 01 30 – Sewer Inspection, Cleaning, and Flow Control
 - 2. Section 33 05 61 – Concrete Manholes
 - 3. Section 33 31 11 – Gravity Sewer Pipe

1.3 SUBMITTALS

- A. For each test to be performed, submit as applicable:
 - 1. Testing procedures.
 - 2. List of test equipment.
 - 3. Testing sequence schedule.
 - 4. Provisions for disposal of flushing and test water.
 - 5. Certification of test gage calibration.
- B. Qualifications statement for each testing agency engaged by the Contractor.

1.4 QUALITY ASSURANCE

- A. No testing shall be performed without the Owner present.

PART 2 - PRODUCTS

2.1 REQUIRED EQUIPMENT

- A. Hydrostatic Testing

1. Pressure Pump
 2. Pressure Hose
 3. Water Meter
 4. Test Connections
 5. Pressure relief Valve
 6. Pressure Gage: Calibrated to 0.1 psi
- B. Infiltration and Exfiltration Testing
1. Plugs
 2. Pump
 3. Measuring Device
 4. Weirs
- C. Vacuum Testing
1. Vacuum Pump
 2. Vacuum Line
 3. Vacuum Tester Base
 4. Shutoff Valve
 5. Stopwatch
 6. Plugs
 7. Vacuum Gage: Calibrated to 0.1 in Hg
- D. Low Pressure Air Testing
1. Air Compressor
 2. Air Supply Line
 3. Shutoff Valves
 4. Pressure Regulator
 5. Pressure Relief Valve
 6. Stopwatch
 7. Plugs
 8. Pressure Gage: Calibrated to 0.1 psi
- E. Mandrel Testing
1. Mandrel
 - a. The mandrel is to be 95% of the inside diameter of the section of pipe being tested.
 - b. Inside diameter used for selection of mandrel shall be exact and not nominal.
 2. Pull Ropes

PART 3 - EXECUTION

3.1 PREPARATION

- A. No testing shall be performed until any component of the sewer system being tested is completely installed and backfilled in accordance with these specifications.
- B. Testing of completed sections of sewer construction prior to the completion of all construction is acceptable provided that all components associated with the test being performed have been completely installed and backfilled in accordance with these specifications.

- C. Prior to testing any section of gravity pipe, that section of pipe shall be lamped.
 - 1. Lamping shall consist of placing a light at one end of a gravity pipe and observing it from the other end.
 - 2. If the lamp is not visible from the other end or the full circle of the gravity pipe on the other end is not visible, then the gravity pipe is not correctly installed to consistent line and grade.
 - 3. Remove and reinstall sections of gravity pipe not installed to consistent line and grade.

3.2 HYDROSTATIC AND LEAKAGE TESTING FOR PRESSURE SEWER PIPING

- A. Hydrostatic and Leakage Testing shall be performed on all pressure sewer pipe.
- B. Prior to Hydrostatic and Leakage Testing:
 - 1. Ensure that all pipe, valves, and branches have been installed and backfilled.
 - 2. Check all valves for the proper open/close position in the test area prior to testing.
 - 3. Install access points and valves prior to testing.
- C. Hydrostatic and Leakage Testing shall be in compliance with AWWA C600 or C605.
- D. Subject the pipe to a minimum pressure of 150% of design operating pressure being measured at the lowest point of the section of pipe to be tested.
- E. The duration of the hydrostatic test shall be no less than two hours. Observe exposed pipes, valve, and other appurtenances for cracks and defects. If defective materials are found, cease hydrostatic testing and replace the defective materials. Correct visible deficiencies and continue testing at same test pressure for an additional two hours to determine leakage rate.
- F. The testing pressure shall not vary by more than ± 5 psi for the duration of the test. Test pressure shall be maintained within this tolerance by adding makeup water through the pressure test pump into the pipeline.
- G. The amount of makeup water added shall be accurately measured in gallons by suitable method and shall not exceed the quantities shown in Table 1 below. Correct visible leaks regardless of quantity of leakage.

3.3 EXFILTRATION TESTING FOR GRAVITY SEWER PIPE

- A. Exfiltration Testing is only permitted for gravity sewer pipes greater than 18-inch and is not a standard test. Shall only be performed when approved by the Owner.
- B. In the presence of the Owner, watertight bulkhead shall be placed in the inlet to the downstream manhole of the section to be tested.
- C. The upstream manhole shall be fitted with a watertight bulkhead modified for a 9-foot-high standpipe which shall be used to test and fill the sewer line with water.
- D. Within 24 hours of filling the test section, the water level in the test standpipe shall be monitored by the Owner for a period of 30 minutes. The water level is to be maintained 8-foot

above the crown of the sewer main by adding measured quantities of water if necessary. The total volume of exfiltration shall be determined from the net drop in water level and the volume of water added during the 30-minute test period.

- E. If the measured exfiltration does not exceed 25 gallons/day/inch/mile of pipeline the section shall be approved for leakage.
- F. Any section of pipeline in which the measured exfiltration is in excess of 25 gallons/day/inch/mile shall not be accepted and all leaks shall be located and corrected.

3.4 VACUUM TESTING OF MANHOLES

- A. Vacuum Testing shall be performed on all newly installed and rehabilitated sewer manholes.
- B. Prior to Vacuum Testing, ensure all manhole components have been installed and backfilled as specified, including all required sealant and manhole frame/cover assembly.
- C. Vacuum testing shall be in compliance with ASTM C1244.
- D. Plug all pipe openings in the manhole to be tested and place the vacuum base over the frame and cover of the manhole. Connect the vacuum pump to the vacuum base outlet port, draw vacuum to 10 in Hg, and close the vacuum base valve.
- E. The duration that the manhole shall be tested depends on the size of the manhole:
 - 1. Manhole diameter of 4 feet: 60 seconds
 - 2. Manhole diameter of 5 feet: 75 seconds
 - 3. Manhole diameter of 6 feet: 90 seconds
 - 4. For manholes greater than 6 feet diameter or non-circular structures, consult Owner for requirements.
- F. Record the drop in vacuum pressure over the test period.
 - 1. If the vacuum drop is greater than 1 in Hg during the test period, the manhole shall be repaired and retested.
 - 2. If the vacuum drop is less than 1 in Hg during the test period, the manhole is acceptable.
- G. If unsatisfactory testing results are achieved, repair manhole and retest until results meet these specifications.

3.5 LOW PRESSURE AIR TESTING OF GRAVITY SEWER PIPE

- A. Low Pressure Air Testing shall be performed on all gravity sewer pipe less than 18-inch diameter. For pipes greater than 18-inch diameter, consult and obtain approval from Owner.
- B. Prior to Low Pressure Air Testing ensure that all pipe, service taps, and manholes have been installed and backfilled as specified.
- C. Low Pressure Air Testing shall be in compliance with ASTM F1417.
- D. Plug all pipe connections to manholes, service laterals, cleanouts, or any other pipe connection that will allow air to escape the portion of pipe being tested.

- E. Determine the groundwater elevation above the spring line of piping.
- F. Introduce air pressure slowly to approximately 4 psig. For every foot of groundwater above the spring line of the pipe being tested, increase starting air test pressure by 0.43 psi. Do not increase starting air test pressure to above 10 psig. Allow pressure to stabilize for five minutes.
- G. The duration that the section of pipe shall be tested depends on the size and length of the section of pipe and can be found in Table 3 below.

Table 3: Low Pressure Air Minimum Testing Duration	
Pipe Size (Inches)	Duration per 100 ft (Minutes)
3	0.2
4	0.3
6	0.7
8	1.2
10	1.5
12	1.8
15	2.1
18	2.4
21	3.0
24	3.6
27	4.2
30	4.8
33	5.4
36	6.0

- H. Record the drop in pressure over the duration of the testing period.
 - 1. If air pressure drops more than 0.5 psi during the testing period, the pipe section has failed and shall be repaired and retested.
 - 2. If air pressure does not drop more than 0.5 psi during the testing period, the piping is acceptable.
- I. If unsatisfactory testing results are achieved, repair the pipe section and retest until results meet these specifications.

3.6 MANDREL TESTING

- A. Mandrel Testing shall be performed on all flexible gravity sewer pipe.
- B. Prior to Mandrel Testing, ensure that all pipe, service taps, and manholes have been installed and backfilled as specified. Mandrel Testing shall not be conducted until backfill has been in place for a minimum of 24 hours.

- C. A sized “go/no go” mandrel with a diameter 95% of the inside diameter of the pipe section being tested shall be pulled by hand through the pipe section being tested. Mechanical methods shall not be used to pull the mandrel through the pipe section.
- D. If the mandrel becomes wedged, stuck, or unable to pass any point in the pipe section, then the deflection of that pipe exceeds acceptable deflection and the piping has failed Mandrel Testing.
- E. If the mandrel passes through the pipe section without becoming wedge, stuck, or unable to pass any point in the pipe section, the piping is acceptable.
- F. If unsatisfactory testing results are achieved, repair pipe section and retest until results meet these specifications.

3.7 HOLIDAY DETECTION TESTING

- A. Holiday Detection test the liner per ASTM D-4787 – Standard Practice for Continuity Verification of Liquid or Sheet Linings Applied to Concrete Substrates. Mark all detected holidays. Repair all holidays in accordance with coating manufacturer’s recommendations.
- B. Contractor shall mark any location that shows a spark or potential for a pinhole and repair these locations per manufacturer's recommendations.
- C. Document and attest all test results and repairs made and provide the report to the Engineer.

3.8 FIELD QUALITY CONTROL

- A. Testing shall not be performed without the Owner or appointed representative of the Owner present.
- B. Engage a qualified agency or persons to perform tests and inspections.
- C. Test and inspection reports shall be prepared and submitted as a certification of results.

END OF SECTION 33 05 05